DESIGN AND IMPLEMENTATION OF LIBRARY AUTOMATION USING KOHA (Open Source Software) AT BHARATHIDASAN UNIVERSITY COLLEGE, PERAMBALUR

A PROJECT REPORT SUBMITTED TO THE PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF

MASTER DEGREE

IN

LIBRARY AND INFORMATION SCIENCE

Submitted by

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DECLARATION

I hereby declare that the project entitled "DESIGN AND IMPLEMENTATION

OF LIBRARY AUTOMATION USING KOHA (OSS) AT BHARATHIDASAN

UNIVERSITY COLLEGE, PERAMBALUR" which is being submitted in partial

fulfilment of the course requirements leading to the award of Master Degree in Library

and Information Science, is the result of the work carried out by me under the guidance

and supervision of Dr. S. Srinivasaragavan, Librarian & Head Dept. of Library and

Information Science, Bharathidasan University.

I further declare that this project has not been previously prepared and submitted

to any other institution/university for any degree/diploma by me or any other person.

Place: Tiruchirappalli

Date:

(R.VENUS)

CERTIFICATE

This is to certify that the Project entitled "DESIGN AND IMPLEMENTATION OF LIBRARY AUTOMATION USING KOHA (OSS) AT BHARATHIDASAN UNIVERSITY COLLEGE, PERAMBALUR". submitted in partial fulfilment of the requirements for the award of the Master Degree in Library and Information Science, Bharathidasan University, is a record of Bonafide research work carried out by Mr.R.Venus under my supervision and guidance and that no part of this work has been submitted for the award of any other degree, diploma, fellowship or similar titles or prizes and that the work has not been published in part or full in any scientific or Popular journal or magazine.

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Place: Tiruchirappalli

Date:

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CHAPTER-I

Introduction

1.1. Introduction

Technology has become as the culture among the stakeholder in all walks of life due to

the reach, the cheaper cost, multiplication, virtual reality and easy to use. Automation is an immense process for any system including higher education and institutions. Higher academic libraries across the globe were the fore runners in integration of data bases of resources and end user and integrating for effective approaches.

Hence the current concepts of digital presence of various business and social practices existing in the web as the outcome of automation and mechanization that was taken place in early eightys and ninetys of the previous century in libraries and other institutions.

Library Automation refers to the use of computers to serve the needs of library users. The operations of a library get a quantum jump with the introduction of computers. The computers help to provide fast and reliable access to the resources available in the library as well as elsewhere. The application of computers in the library operations avoids repetitive jobs and saves lot of labour, time, speeds up operations, increases use of library resources. Computers are not only used as a tool for processing the data, but also for data storage and accessing.

Automating a college library is the process which restructures its functions and reinvents its services. By keeping a database as the basis, automation converge new technologies of information storage and retrieval with traditional housekeeping operations. An automated college library can serve the teaching and learning community more effectively. A reduction in the time needed for routine operations can be utilized to give customized services to the users. The process of library automation has a short history in our country. It needs proper planning and active implementation in initiating the automation of its library to cope with the ever changing needs of the students and staff. The modernization of the library media centre helps the students to become skilled information users and lifelong learners

1.1.2. What is Library Automation?

Library automation is the use of automatic and semi-automatic data processing

machines to perform such traditional library work consisting of acquisitions, technical processing, serials control, circulation and reference services all entail time consuming manual work. Though these activities are essential to proper functioning of a library, they consume professional staff time that might otherwise go towards user services and library development. Library computerization is now gaining importance necessitating the establishment of profession-wide standards. Comprehensive studies of library computer systems world over include discussions of machine-managed acquisitions, cataloguing, serials control, circulation and bibliographic service modules. The literature in this area highlights major aspects of computer's role in the library environment. Similar to several aspects of library management, the demand for more and faster information services and the decline in library resources are compelling librarians to appreciate the role of computers within their operations. In general, librarians are looking to maximize the benefits of automation by spreading computer use to as many aspects of library activities as possible by taking advantage of developments in computer hardware and software and telecommunications.

1.1.3. Definition

According to Webster's dictionary "automation is the technique of making an apparatus, a process or a system operate automatically". In other words it is the machinery that mathematically manipulates information storing, select, presents and records input data or internally generated data. Automation word is used for automatic technical process. In libraries automation refers to the process of automation in house functions such as circulation, cataloguing acquisition, serial controls etc.

Automation is a technique to make a system automated means self-active .For this electronic machines are used to automate the libraries. Thus library automation means the

application of machines to perform the different routines, repetitive and clerical jobs involved in functions and services of the libraries.

Library Automation is the general term for information and communication technologies (ICT) that are used to replace manual systems in the library.

1.1.4. History

Punched cards were invented by Hollerith in 1880 and used in tabulating the US census data. The library at the University of Texas was perhaps the first to use punched cards in 1936 for circulation control. The Library of Congress used the unit record machines for the production of catalogues in 1950. Many libraries in the US followed the system for automating their activities.

Library automation entered into its second era in 1960s with the advent of computers. The notable ventures were MEDLARS, MARC, etc. Until the early 1990s, "automating the library" involved generally the same features as those in place since the advent of machine readable cataloguing record in the late 1960s. Libraries created integrated text based systems using micro/mini computers in which traditional library housekeeping operations were computerized using the library's database as the foundation.

In the last decade, library automation has undergone a transformation that reflects changing definitions of library service in general and access to resources in particular. The introduction of global networking such as internet, cheap availability of technology and new media technologies made information more accessible.

Today's integrated library systems not only provide modules which automate traditional

library functions but also capable of connecting through the local systems into systems of other information or knowledge suppliers, databases and internet.

1.1.5. Areas of Library Automation

As a first step in a planning process, it is desirable to formulate a model for computerization listing all itemized and prioritized information systems being maintained on a manual basis by the library. For this exercise it is necessary to break down these procedures into their constituent parts. When further subdividing these activities, each item is to be considered of its functional elements. The systems and subsystems listed below are only indicative and may vary with differing library system environments.

These are:

> Acquisitions

- Selection
- Ordering
- Claiming/cancellation
- Receiving/invoice processing
- Extended procurements
- Gift tracking
- Fund Control
- Maintains information about all library related funds
- Ability to group funds (nesting)
- Track fund allocations and adjustments
- Fund encumbrance
- Fund expenditure

- Cash Balance
- Free Balance
- Automatic updating of fiscal information through recording of specific transactions
- Track year-to-date expenditures
- Create Purchase Orders

Technical Services

Cataloguing

- Books
- Serials
- Special Collections

Circulation

- Charge/Renewal
- Discharge
- Loan Periods
- Processing schedules
- Holds
- Messages
- Blocks
- Notices
- Transaction Recording Devices for off-line processing
- Member control

Inventory Control

> Serials Control

- Receipt (check-in)
- Claiming
- Bindery control
- Replacements
- Monographic serials
- Invoice processing

> Reference Services

- Desk services
- User tools
- Bibliographic utilization
- Reprography
- Inter-library communications
- General Administration
- Grants Administratiuon
- Library Publications
- Bindery
- Periodical Citation Searching

> OPAC

 Bibliographic Database that enable search with multiple approaches viz author, title, subject, keyword, publisher, ISBN and so on that can be accessible by the end user both Intranet and Internet.

1.1.5. Need for library automation:

As the Information and communication technology has been widely in the all sectors and particularly in education are institutions. Process of automating libraries for remote operations become inventible by automating the work process particularly creating databases for the resources and users by incorporating all relevant parameters.

This enable the libraries to have standard database for integrated library management system for all routine library operations to be rendered consistently.

Following are considered as important factors for Library Automation

- **❖** Information explosion.
- ❖ Increase in the collection of libraries.
- ❖ Inability of users to explore the unlimited literature and information of their interest.
- ❖ Advances in the computer and communication technology.
- ❖ Wastage of user / staff time in locating the information.
- Provide wide access to resources within the libraries and elsewhere.
- * Better access.
- Quality in service.
- ❖ Cooperative efforts (Resource Sharing),

1.1.6. Advantages of Library Automation

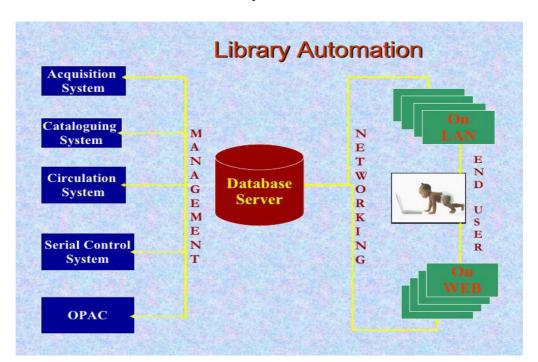
- ❖ Improve the quality, speed and effectiveness of services.
- Relieve professional staff from clerical work.
- Improve access to remote users.

- * Facilitate wider dissemination of information products and services.
- Resource-sharing among other library networks(Union Catalogues).
- **t** Enable rapid communication with other libraries.
- ❖ Improve the management of physical and financial resources.

1.1.7 MODULES:

- > Acquisition
- Cataloguing
- Circulation
- Serial Control
- > Administration
- ➢ OPAC
- ➤ User Services –SDI, CAS

1.1.9. Structure of Automated Library



1.1.10. Library Automation Software:

There are number of commercial library automation packages are available today viz. but even the basic cost of these is beyond the reach of many small libraries. And the added disadvantage of these software's is that even after paying the one time hefty price to buy it, the library has to continue spending money for the recurring cost involved by way of maintenance and newer versions of the same package. To overcome this problem, now we can go for Library Automation with Freeware and open source software with latest technologies and good features.

1.1.10.1. Commercial Software's

- > SOUL
- **▶** LIBSYS
- > AUTOLIB
- > EASY LIBSOFT
- > NIRMALS
- > VTLS
- ➤ SLIM++
- ➤ LIBRARIAN
- > LIBSUIT
- > ROVAN LMS etc...

1.1.10.2. Free and Open Source

Open Source Software (OSS) is computer software that is available in source code form for which the source code and certain other rights normally reserved for copyright holders are provided under a software license that permits users to study, change, and improve the software. Open Source licenses often meet the requirements of the Open Source Definition. Some open source software is available within the public domain. Open Source Software is very often developed in public, collaborative manner. Open Source Software is the most prominent example of open source development and often compared to use – generated content. The term open source software originated as part of a marketing campaign for free software. A report by Standish (2008) Group states that adoption of open source software models has result in savings of about \$60 billion per year to consumers.

Open Source Software for Library Automation

- > KOHA
- > WINISIS
- > EVERGREEN
- > OPEN BIBLIO
- ➤ LIBRARYMANAGEMENT SYSTEM etc.
- DSpace
- > EPrints
- Greenstone
- > Fedora
- > IR+
- SimpleDL etc.

CHAPTER-II

REVIEW OF LITERATURE

Existing literature on design and development of Automation libraries and other variables related to the objectives of the study have been studied comprehensively both print and e-resources literature are thoroughly examined and reviewed are appended.

Ochando, M. B., Martinez-Comanche, J. (2012) The process of transmission of bibliographic records between libraries is a complex task, usually treated by the Z39.50 protocol. Approach: The objective of this research is to propose an alternative method to simplify this process, using the techniques of content syndication. The computer program compares the feasibility of using different formats (ATOM, RSS1.0, RSS2.0 and MARC-XML) to convey and share library catalogs of various sizes (up to 1 million records) between libraries. Tests have shown that a smaller collection of 25,000 records, the time insertion/import catalogs is less than 1 min. The analysis suggests that syndication is a useful technique for the transmission and retrieval of bibliographic information.

Egunjobi, R. A., Awoyemi, R. A. (2012) Libraries in Nigeria have had to face several challenges and constraints in the development of library automation Systems. These challenges include poor information and communication technology (ICT) infrastructure, poor funding, and poor ICT skills among library staff, as well as choosing appropriate software solutions. The introduction of open source software such as Koha is therefore a positive revolution in Libraries across Nigeria. The purpose of this paper is to make a strong case for the adoption of open source software in various libraries and information centres. This paper discusses Adeyemi College of Education Library automation processes using the Koha Library Management Software. It highlights the strategy adopted, major automation areas, and various factors to be considered by librarians when developing automation processes for their libraries. This paper shows that automation can improve the library's relevance to the academic community. It further reveals that library staff enjoy working in an automated environment and the patrons enjoy services rendered using an OPAC instead of a card catalogue. Practical implications: Library automation will address the problem of manual processing of materials. It will further mean less drudgery, easy generation of records, space conservation, improvement of information services, and easy retrievals. The major obstacle to library automation in Nigeria has been poor funding. This paper is an eye opener. Libraries now have the opportunities to use open source software instead of waiting to acquire software that costs so much and may discourage management from granting the request.

Omsa, A at.al (2012). have described an overview regarding library automation and present possibilities to handle books using robots in the context of library activities. In this context, library automation is referring to hardware and software systems that are implemented in the library process activities in order to automate book handling applications. Some similar developments are presented. Also, two CAD models of the proposed book manipulator using linear drives are presented.

Maureen, A., & Blessing, O. (2011) Library automation has to do with the act of computerizing user's registration and library materials, borrowing and returning, locating of material and calculating overdue fines in the library system. The status of automated library management systems in Nigerian state universities were assessed through site visits and interview surveys of the views of academic/non-academic staff, students and researchers in the universities. This study designed an automated library system that will help university libraries to keep accurate track of the transaction done via storing information about library users, accurately locating library materials effectively with ease and tracking of all borrowing and returning of books. Also where fine is applicable, the system can calculate overdue of library defaulters and provide useful information that can help the management of the library in decision making. The findings were used to design an automated library management system for Delta State University in Nigeria.

Anuradha, K.T., Sivakaminathan, R., Kumar, P.A. (2011) There are many library automation packages available as open-source software, comprising two modules: staff-client module and online public access catalogue (OPAC). Although the OPAC of these library automation packages provides advanced features of searching and retrieval of bibliographic

records, none of them facilitate full-text searching. Most of the available. open-source digital library software facilitates indexing and searching of full-text documents in different formats. This paper makes an effort to enable full-text search features in the widely used open-source library automation package Koha, by integrating it with two open-source digital library software packages, Greenstone Digital Library Software (GSDL) and Fedora Generic Search Service (FGSS), independently. Design/methodology/approach: The implementation is done by making use of the Search and Retrieval by URL (SRU) feature available in Koha, GSDL and FGSS. The full-text documents are indexed both in Koha and GSDL and FGSS. Findings: Full-text searching capability in Koha is achieved by integrating either GSDL or FGSS into Koha and by passing an SRU request to GSDL or FGSS from Koha. The full-text documents are indexed both in the library automation package (Koha) and digital library software (GSDL, FGSS) Originality/value: This is the first implementation enabling the full-text search feature in a library automation software by integrating it into digital library software.

Jayaprakash, M., Balasubramani, R. (2011) have explained Automation of library operations and services is essential for efficient functioning of the library and saving the library users' time. Hence a study has been conducted to investigate the Automation in university libraries in Tamilnadu, India. It discusses automation, its need, and application in university libraries. The study explains the various problems faced by authorities and the staff during the process of automation. The tool adopted to conduct the study is a well structured questionnaire.

Aderonke O. Otunla & Esther A. Akanmu-Adeyemo (2010) An automated library environment is quite different from that of a library whose operations and services are still done manually. The paper shares Bowen University Library, Iwo, Nigeria automation

experiences using Open Source Library Management Software, Koha. The paper explains the automation process such as choice of software, installation and configuration, training of staff an users, retrospective conversion, challenges and experience after automation. The paper carries out survey of library user satisfaction with the system. The result shows that users prefer the automated system to manual system. It also explains how automation has enhanced operations and provision of information services. The paper among others encourages libraries to consider the use of an open source software for their automation project, advises that they should be open to changes that ICT introduces to library profession, and settle the issue of regular power supply with management before embarking on automation project.

Srinivasa Ragavan.S et.al (2010). Library is a fast growing organism. The ancient methods of maintaining it are no longer dynamic service for the clientele, application of modern techniques has become absolutely indispensable. A properly computerized library will help its users with quick and prompt services. Library automation refers to mechanization of library housekeeping operations predominantly by computerization. The present study aimed to develop and updated database of Books and other Resources of the school of Chemistry Library, Bharathidasan University, to implement automated system using Koha Library Integrated Open Source Software, to carry out the charging and discharging functions of the circulation section more effectively to provide various search options to know the availability of books in the Library to Koha is an integrated software system with all the required models for small to very large libraries an open source, any Library wanted to go for automation for their library housekeeping operations can make use of this software.

Breeding, Marshall (2009) the author said that article discusses the use of automation software by libraries. The library automation environment favors systems that can deliver, in one way or another, products that allow libraries more liberal access to their data. Open source software is not the only approach possible as libraries seek options to gain more access and control over their data and other aspects of their technology environment. The Z39.50 Machine-Readable Cataloging (MARC) protocol provides a standard approach for search and retrieval for information systems and has been very effective as the basis for library applications.

Breeding, Marshall (2009) has discussed the viability of open source integrated library system (ILS) in the U.S. libraries. It notes that the library automation industry has seen the burst of activity involving open source, following an era where companies offer ILS under traditional closed-source license arrangements. Reports show that news of libraries selecting open source ILS products become routine. These products tend to make great strides in adoption in libraries within the country. It points out that each of the companies involved in commercial support of these products shares a number of significant characteristics.

de Smet, E. (2009) has explain the new ABCD software for free and open library automation with ISIS is presented with its technological and practical characteristics. As a web-based integrated solution it combines most (if not all) functions of other systems such as KOHA with the flexibility of the (Win)ISIS software to create and handle databases of any structure. The main technical characteristics as well as some managerial issues are briefly presented. The planning on the further work is discussed along with some challenges related to the specific nature of the ISIS users community.

JI Adeyomoye (2008) This paper reported the automation effort of Igbinedion university library, Okada, highlighting the various challenges that impede on the actualization

of a full automated library system. Among the challenges identified are: Unavailability of fund, erratic power supply, inadequate professional librarians to execute the project, lack of Local Area Network (LAN), choice of software and absence of Maintenance and Support Agreement. Recommendations that will enable the library overcome the challenges were made. It is concluded that, library automation at Igbinedion University library, Okada, is still in its infancy. The University management should as a matter of urgency provide fund to compliment the effort of Chief Achike Udenwa for a full automated library system to be in place.

Bansode, Sadanand Y and Periera, Shamin (2008) focused on research about the automation of academic libraries in universities and colleges in the Goa State of Taleigao, India. Particular attention is given to the status of library automation in college libraries in this section of India. Topics include how many libraries have undergone automation, which areas are automated, whether there exists a sufficient amount of staff available to implement automation, as well as examples of the barriers college libraries are facing in India.

Mahmood, Khalid and Khan, Muhammad Ajmal (2008) define that a case study of the Pakistan Library Automation Group, formed in October 2000 by volunteers in library and information science and computer science in Pakistan. The group's mission was to promote the use of ICT in Pakistani libraries with virtually no financial support. The achievements of the group during 6 years include: PakLAG Website; Automation of libraries with Library Information Management System (LIMS); Multilingual Web OPAC; Searching interface of National Digital Library; Online directory of LIS professionals; Publications program; Pak-LIS News; E-mail discussion group; Online posting of job advertisements; Virtual library; Training in ICTs for library professionals; and free consultancy service in library automation. The group's future plans are also presented. The study concludes that, if some committed professionals present themselves for voluntary endeavors and plan to develop their nation

without any material resources, they can play a significant role in the promotion of ICT in the libraries of a developing country.

Husain, Shabahat and Ansari, Mehtab Alam (2007) has define the Introduction of computers in libraries has immensely enhanced the effectiveness of library services including efficient organization and retrieval of information activities. Since the application of information technology in libraries, one of the greatest challenges before the library managers is the selection of a good library automation software package which can cater to the needs of a particular library. In India, library automation process started in the last decade of the previous century. Many Indian as well as foreign software companies had entered into the market. Nevertheless, only a couple of library automation software packages gained success in making their presence felt into Indian market. The present article discusses the salient features of cataloguing module of three such packages, namely, Alice for Windows, LibSys and Virtual and their acceptability in a developing nation.

Adanu, Theodosia S. A (2007) define the paper reviews the three-year Carnegie Corporation funded **library** automation project of the University of Ghana **Library** System, two and a half years into the project. It highlights the automation environment before the Carnegie project and describes essential factors that have contributed to the automation process to date. The contribution made by external players is emphasised while challenges posed by the project and lessons learned are presented. The paper concludes by assessing experience gained and the challenges that lie ahead before the system takes off.

Mahmood, Arshad (2006) highlights the gratefulness of the author for having an opportunity to attend the Library Automation Workshop from February 2-3, 2006. He said that he will never forget his experience at the workshop. The author expressed his appreciation to the Pakistan Library Automation Group for supporting the event. The workshop provided information professionals an opportunity to receive a look at how Library Information Management System Work and how to transfer library data in to Online Public Access Catalog.

Lines, M. B. (2006) have explained an automated order routine for the University Library in Newcastle which began in April 1966. Design/methodology/ approach - Presents the author's experiences of the manual order processing system, and the impetus for trialling an automated system. The stages of the automated system are described in detail. Findings -

Time spent on processing recommendation slips was reduced by 30 percent using the automated system. Important data and printouts can be produced which should lead to a reduction in clerical time and enable accounting to be done automatically. Originality/value - The paper has historical value.

Amekuedee, J.(2005) has undertaken to find out which library processes have been automated in Ghana's three older public university libraries namely, the Balme Library, the Kwame Nkrumah University of Science and Technology (KNUST) Library and the University of Cape Coast (UCC) Library. Design/methodology/approach - Using data obtained through the use of questionnaires, the study examined areas of general automation, automation of specific library processes, networking, internet connectivity, training, and major constraints to library automation. Findings - The study found out that even though the university libraries realize the importance of library automation, they are hampered by lack of funds, lack of support from the university administrations, and lack of skilled staff to embark on automation of all library processes. It was also revealed that none of the libraries have on OPAC (online public access catalogue). Originality/value - The study concludes with recommendations that would enhance the university libraries drive towards automation of their library processes and ensure effective and efficient use of the new technology to raise the image of the libraries and give their library clients more services.

Suku, J., Pillai, M.G. (2005) have discussed the present scenario of automation activities of university libraries in Kerala. The survey findings mainly cover various aspects of library automation such as information technology infrastructure, in-house activities, information services and their usage, manpower development, and budget. The paper briefly describes the role of INFLIBNET Centre in accelerating the automation activities of university

libraries, especially in the context of the recently introduced UGC-Infonet programme. The problems encountered in this process are identified and possible suggestions are stated.

Rajesh chandrakar (2003) has the world has reached the last stages of library automation, while, on the other, the Internet has revolutionized it with different concepts such as the electronic, digital, virtual and library without walls. Now, professionals are researching knowledge management, Internet cataloguing, copy cataloguing, metadata, Z39.50 retrieval protocol, and resource sharing in the context of inter-library loan, document delivery services, Internet services through Net etc. Unfortunately in an Indian context, libraries are still in the process of the automation and digitization of their resources. This paper discusses some of the barriers to progress in these areas in university libraries in India.

Saarti, J. (2003) have explained survey of the costs and types of the library automation systems in use in public libraries in Finland. The study was carried out during 2000. The results show that almost all of the Finnish public libraries have some kind of library automation system and that 80 per cent of them are already offering services via the Internet. The costs of establishing public library automation have been approximately 16.8 million Euros with annual operating costs of about 5.7 million Euros, i.e. about 1.2 Euros for every Finnish citizen. The labour costs used in building and maintaining library automation systems had been poorly monitored in the libraries. Thus it is proposed that a model for a better cost-effective analysis of library automation should be established for the Finnish public libraries.

Choi, B.K., Hercules, D.M., Sepetov, N., Issakova, O., Gusev, A.I. (2002) have developed an approach to applying intelligent automation of liquid chromatography-mass spectrometry analysis for analytical screening of compound libraries using Microsoft Visual Basic macros. They performed the initial characterization of compounds using universal analytical methods. Samples that failed to meet selected criteria of analysis were automatically reanalyzed using secondary or alternative analytical conditions. The approach enables automated high-throughput analysis of compounds with diverse chemical properties and does not compromise sample throughput and data quality.

McCallum, S. H. (2002). Libraries' most central and costly activity-cataloging material and maintaining the catalogs providing end-user access-had requirements that defied efficient automation until the mid-1960s, when the Library of Congress developed the MARC format for data records. The format became the foundation for automated systems for libraries that took data sharing to new levels and enabled exploitation of future computer developments to create today's online catalog environment.

Lynne Porat (2001) employers need for libraries to minimize expenses and reduce the number of labour – intensive tasks has prompted the ILL unit of the library at the University of Haifa in Israel to undertake a systematic process of automation. The article describes the process and development of this automation and assesses the extent to which it has improved customer service. Also outlined are ways in which the library has benefited from the automation.

A.T.Francis (1998). Important software problems faced by the library professionals in India are analyzed and points out various compatibility and suitability issues in the selection of library software. The paper also hints that these problems has affected the progress of computerization of libraries. Up-to-date and detailed information on software's available in India can prevent several issues that may arise in the course of computerization. An agency/mechanism to continuously evaluate the software's may be formed to meet this requirement.

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CHAPTER III

RESEARCH DESIGN

The use of computers in the library is the need of the day because its application increases the use and utility of libraries. Its implications can be understood in terms of both productivity and accessibility

3.1. SATEMENT OF THE PROBLEM

Implementation of Open Source Integrated Library Software is difficult for library professionals because of its complex installation procedure. Most of the Open Source

software are suitable for libraries work only with Linux operating system. Installation of Open Source Library Management System in Linux operating system is note to say that the installation of the software is a user friendly. Windows based software's. Installations of Koha in libraries need either the help of an expert or the library professionals should acquire expertise in Linux operating system.

To have an effective control over the Library Management or the college, this study

Design and Implementation of library Automation Using KOHA (OSS) at Bharathidasan

University College, Perambalur was carried out.

3.2. Objectives

To implementation of KOHA at Bharathidasan University college library, the following are the objectives aimed.

- ❖ To develop and update database of books and other resources of Bharathidasan University college library in Perambalur.
- ❖ To implement automated Library system using KOHA Open Source Software.
- ❖ To carryout automation of housekeeping functions very effectively.
- ❖ To provide various search options like author, title, keyword, publisher, publication and year etc.
- ❖ To know the availability of books and other status of the resources. by all the stakeholders.

- ❖ To connect the library OPAC in web environment for the wider reach.
- ❖ To have entire control over the library operations.

3.3. Plan of work

The various functions and routines of project section of Bharathidasan University College Library operations has been studied and observed. Accordingly the following steps were followed to create an automated library system.

- The researcher has physically collected all books Data for Bharathidasan University College Library.
- The bibliographic details were collected in a data entry sheet browsing the Books.
- ❖ The researcher has prepared 650 of data entry sheets (every sheet entries10 records each) with relevant (Acc No, Title, Author, Edition, Volume, Publisher, Place, ISBN, Price, Copies) information to create database.
- ❖ The data were entered in to the system using Micro Soft Excel.
- ❖ The data has been edited after verifying for wrong entries and spelling and grammatical error were rectified.
- The researcher has classified the titles of the books with DDC number for classified approach to search.
- ❖ Indexing has been made to enable the search with the titles, author, subject, keyword, publisher, publication and year.
- ❖ The database is integrated with library database by using the Koha MARC edit software.
- Studying the different modules of Koha software.

- ❖ Preparation of Koha installation (Open Source Software) of Live CD by downloading from the respective website.
- ❖ To uploading the collected bibliographic records from the colleges into installed system of Koha.
- ❖ Launching the trial version Live demo.
- ❖ Interlinking with the Bharathidasan University College library website.

3.4. SCOPE

- ❖ Implement a powerful and flexible integrated library system, supporting the academic, research and administrative needs of students, faculty and staff.
- ❖ Improve the quality, speed and effectiveness of library service.
- ❖ Convert data from the existing library systems into standard format, as for example: MARC 21; that will preserve and insure its continued development and preservation, as well as the ability to migrate data to new generations of library system.
- ❖ Import data generated by the central student and personnel management information databases. This will enable the library with data to use as a basis for assigning user rights, hence improve the "library user" tracking activities.
- ❖ Provide barrier-free, timely access to the information resource of the university college library as well as gateways to national & international resources.

Limited to BDU college Library resources and serve with the records of regular full term faculty members and students of Perambalur College.

CHAPTER-IV

OVERVIEW OF KOHA

4.1. Introduction

Koha is the first open source Integrated Library System (ILS) with true enterprise-class ILS functionalities including circulation, cataloging, acquisitions, serials, reserves, user management, branch relationships, etc. It is built using library standards and protocols to ensure interoperability with other systems and technologies and provide a platform-independent solution. Developed initially in New Zealand by Katipo Communications Ltd., Koha was first deployed in Jan 2000 for Horowhenua Library Trust and has spread across the world since then. Koha is distributed under the General Public License (GPL) and is currently maintained by a team of software providers and library technologists around the globe.

4.1.2. History

Koha was created in 1999 by Katipo Communications for the Horowhenua Library Trust in New Zealand. The first installation went live in January of 2000. In 2001, Paul Poulain (of Marseille, France) began adding new features to Koha, most significantly support for multiple languages. Koha has been translated from its original English into French, Chinese, Arabic and several other languages. It supports the international records and

cataloguing standards MARC and Z39.50 which was added by Paul Poulain in 2002. Sponsorship for MARC and Z39.50 support was taken up by the Nelsonville Public Library.

4.1.3. KOHA Feature

Koha is feature rich Integrated Library System. Here is a listing of it's key features:

- ❖ A full featured modern integrated library software (ILS).
- ❖ Award winning and free/Open-source Software.(no license fee).
- OS independent any operating system. Linux, Unix, Mac.
- ❖ Web based. Web-based Interfaces. We can integrate with website.
- ❖ Full MARC21 and UNIMARC support for professional cataloguing.
- ❖ Multilingual and multi-user support.
- ❖ Library-Standards-Compliant. Industrial standards & protocols.
- ❖ Z39.50 server.
- Customizable web based opac.circulation system.
- ❖ Online reservation.
- ❖ Full catalogue, circulation, acquisitions, library stock management.
- ❖ Web based OPAC, public to search the catalogue.
- ❖ Major industry-standard database type (text, RDBMS), SQL, MYSQL.
- Serial management module.
- Print your barcode.
- ❖ Export and import records, ISO2709.

4.1.4. KOHA Modules

- 1. Acquisition
- 2. Cataloguing
- 3. OPAC (Online Public Access Catalogue)
- 4. Circulation
- 5. Serial Control
- 6. Management or Report
- 7. System maintenance Facilities or System Parameters.

Now, some explanation of the above points:

Acquisition: – Activities related to obtaining various library materials by purchase, exchange, or gift, including pre-order bibliographic searching, ordering and receiving materials, processing invoices, and the maintenance of the necessary records related to acquisitions.

The following requirements are under the acquisition: -

- ❖ Selection of items: What kind of books, CD, DVD etc want to a staff buy for a library .For books it could be hardcopy, softcopy or original copy.
- **Duplicate checking:** A staff can find duplicate checking from this option.
- ❖ Selection of vendor: A staff of a library can choose a vendor to purchase a book. Various vendor lists are included here, so that, staff or purchase officer of the library can choose his/her favourite and eligible vendor from the list.
- **Ordering:** After choosing the vendor, ordering is done by the Library authority.
- ❖ Receipting: From this option staff of a library can check if a book has arrived in library on time from vendor or not.
- **Claiming:** If vendor is unable to supply books on time, library can claim on that vendor.

- ❖ Fund control: A fixed amount of money is assigned for particular department. And, with the "Fund Control" feature of ILS, this becomes very easy to control in library database.
- **Report:** These features create reports on books, journals, CDs, DVDs etc.

Cataloguing: -

- ❖ Record creation: Record about books, CD, DVD etc in database in standard format say MARC 21 format.
- ❖ Duplicate checking: A staff can find duplicate checking from this option. That means, one can compare two books whether they are same or not.
- * Record editing: A staff can edit information of the library materials.
- ❖ Authority files: The computerized list of subjects, series, and name headings used in the online catalogue.
- ❖ Cataloguing copies: When a staff stores the materials record in database there error could be occurred in data entry like call number of the book or edition number. This type of errors can lower by using this feature.
- ❖ Keyword: In an electronic index or database, keywords can be combined together using the Boolean operators like AND, OR, and NOT.
- ❖ Import and Export data: Reports on which materials are imported from other library or exported to another one.

OPAC (Online Public Access Catalogue): -

An OPAC (Online Public Access Catalog) is the electronic card cataloging system to look up library resources, such as books, cds or others.

❖ Normal search: Book search by keyword, title, author etc.

- ❖ Advanced search/Modify search/New search: Exact search means by author name or by book title.
- ❖ Status inquiry: Information of a particular book for borrows. If it is not available then no one can borrow this book only can hold this book.
- ❖ Print provision: After issuing a book patron can print issued copy from the software.
- ❖ Prompts and help massages: Actually this option help a patron to gather knowledge about software how the library operation works in particular software.
- ❖ **Personal account:** A member of the particular institution can save his/her information in database in a with this software.
- ❖ Online access: Any one can see or access software over Internet or Intranet.

❖ Display:

- o Latest address display.
- o Display book are journals using librarythink.

Circulation: -

- ❖ Patrons and items files: Record about all the patron and materials of a library. Setting parameters (Issue, return etc): A single uniquely numbered or dated part of a periodical or newspaper.
- ❖ Fine and overdue notice: Material, which is not returned to the library by its due date, is considered overdue.
- ❖ Hold and recalls: A hold guarantees that when a book is returned to the circulation desk it will be saved for another user.

- ❖ Reservations: From this option we can know about a particular book which is available or reserve by someone in library.
- * Renewal: An extension of the loan period for charged library materials. As long as no one else requests the book, renewals are unlimited. Renewals may be handled in person at a circulation desk, by phone, or through the online catalogue.
- ❖ Short-term loans: If any book holds by more than one person the only book borrow for one week only.

Serial control: -

Serials include journals, periodicals, magazines, almanacs, annual reports, numbered monographs, and other materials. This term is sometimes used interchangeably with "periodical." Ordering, Receipting, Collecting, Claiming and Binding are included here. I talked about these before but only binding. Here, Binding means, any library staff can bind the journal in a library to access easily.

Management: -

❖ Information: Information about the total library operation. If staffs need any information he/she can gather various information with this option.

System maintenance facilities: -

- ❖ User interface: In software there is common interface for all users but some interface may varies based on user.
- ❖ Security of records and files: A library promise to all users that they keep their password, information and profile safe and secure.
- ❖ Customization: We can customize each and every field in open source software such as KOHA.

4.1.5. Koha System Architecture

* Koha is based on client-server architecture.

Network Server: koha can be installed on a server running Linux, Unix, Mac. The re-

commended operating system is stable version of Debian Linux, although Koha can

run on any modern operating system.

❖ Client Workstations: Koha requires only a web browser on the workstation (a graph-

ical browser, or even a text browser for the OPAC). Koha thus functions on PCs run-

ning Windows, PCs running Linux, Macs, or even UNIX workstations.

❖ Koha runs over any TCP-IP network.

* Koha accommodates low-bandwidth connections. It is completely usable on ordinary

telephone line connections. This is more true of the librarian interface than of the

public interface (OPAC).

4.1.6. Technical Requirements

Server operating system: Linux,

Web server: Apache.

Programming language: Perl.

❖ Database: MySQL.

❖ Integrated Library software: Koha 3.0

4.2. INSTALLATION OF KOHA

Put the disc in, install Ubuntu, and Koha installs itself along with it. No internet connection needed. Koha Live CD comes with all language packs, Zebra support and public Z39.50 server. Koha is one tough application to install by today's standard, even when things aren't going wrong. This Live CD will change that. All we need to do is pop the disc in, install Ubuntu, and Koha installs itself along with it - no work required! We don't even need an internet connection. Following steps are comprises the koha installation method.

Insert the CD into the CD drive and reboot the machine. In some systems you may need to con- Figure the system to boot from the CD using a F12 or F9

STEP-1

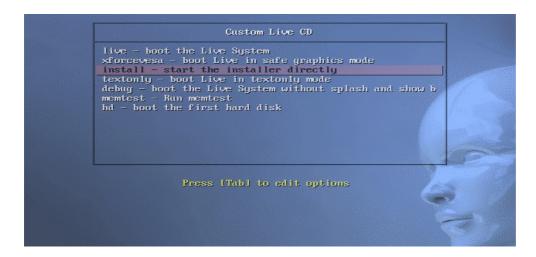


Fig. 4.2.1

At the boot menu, just press ENTER to enter Live CD mode. Or, using arrow keys, you can select "install" option to immediately start installation to hard disk

STEP-2



Fig. 4.2.2

From this - Figure shows select the language for go to next step.

STEP-3



Fig. 4.2.3

Now we choose the location of the Country and Time zone

STEP-4



Fig. 4.2.4

To Select the Keyboard Layout Language.







Fig. 4.2.5

Fig. 4.2.6

Here we give the Name and what name, password will log on our system, finally give Name of the Computer.

STEP - 7



Fig. 4.2.7

Here the files are ready to installing the computer

STEP - 8

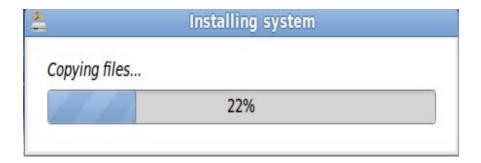


Fig. 4.2.8

The Koha files are copying to the hard drive of computer

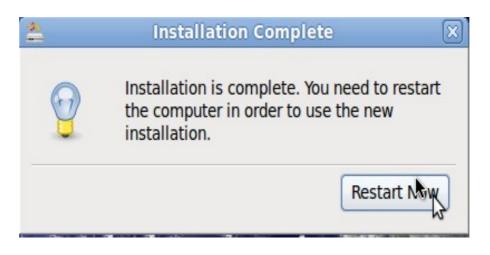


Fig. 4.2.9

Now the installation process is completed next we have to restart the system to perfect configuration.

STEP - 10

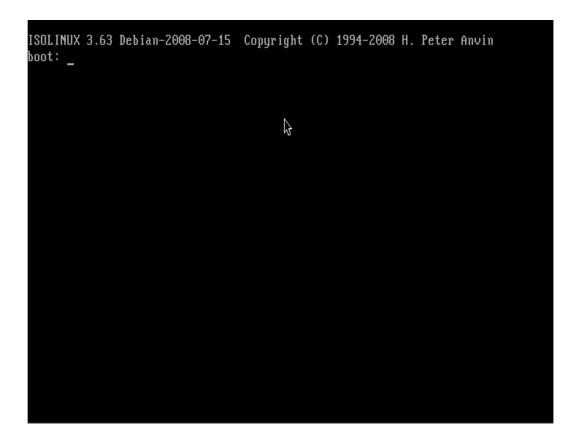


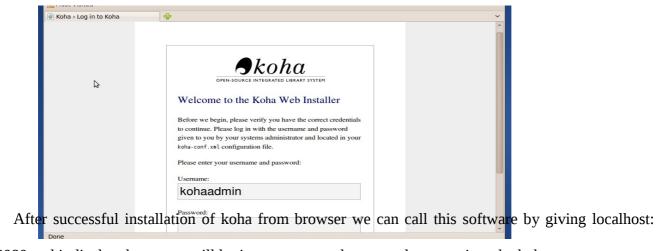
Fig. 4.2.10

The system will start in few minutes and con-Figured the Debian Operating System.



Fig. 4.2.11

Once the Live CD has finished loading (or after you have finished installing Koha to hard drive), open the web browser and go to (http://localhost:8080). This will begin Koha's web-based installer wizard. We can also do this from another computer by typing in the IP instead.



8080 and it display the screen will login username and password to enter into the koha.

4.3. Importing Excel Data into KOHA

Koha will not let you import excel records directly. Well here is a very simple solution for you which will let you import your excel records in Koha easily. First, we will convert excel file into Marc file and then will import it into Koha.

KOHA Integrated Library Automation Software will be installed at the University College Library. Koha library management system modules will be customized for WebOPAC model. Metadata will be created as to the MARC 21 format. 6,500 bibliographic records will be converted into MARC 21 format and the same will be imported into KOHA.

The following MARC tag has been used to describe the respective records

Tag name	Descriptions
082\$a	Call Number
245\$a	Title of the Book
260\$a	Place of Publication
260\$c	Date of Publication
850\$a	Holding Institution
952\$b	Holding Branch
952\$0	Available
952\$g	Cost, purchase price

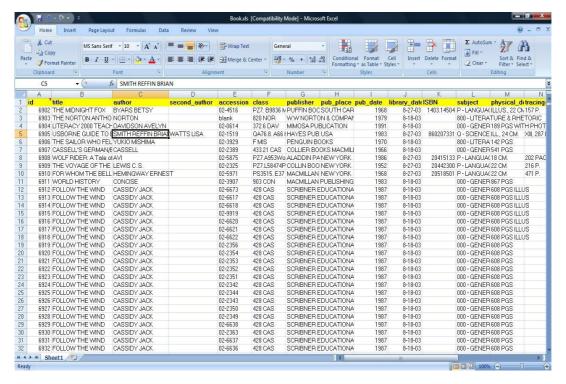
Tag Name	Descriptions
100\$a	Personal Author Name
250\$a	Edition Statement
260\$b	Name of Publishers
942\$c	Item Number
952\$a	Home Branch
952\$p	Accession Number
952\$c	Shelving location

4.3.1 MARC IMPORT

Follow the given steps to import your excel records into Koha

STEP: 1

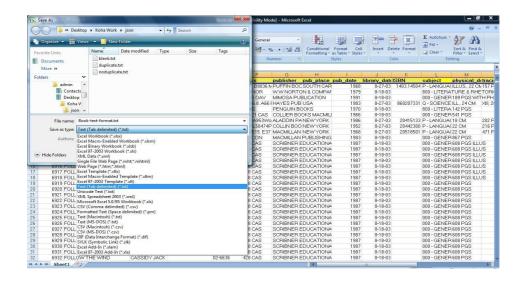
The details of the Books have been entered into an Excel file.



Spread Sheet – Figure 4.3.1.

STEP: 2

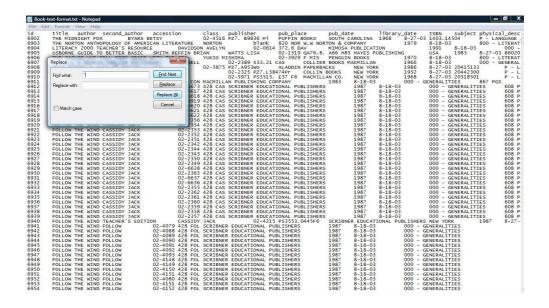
The data entered in the excel has being converted into Tab delimit format



The Excel file Save as Tab Delimits – Figure 4.3.2

STEP: 3

TAB DELIMITED FILE:



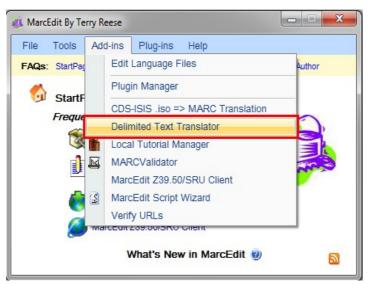
The text file single and double quotations are removed – Figure 4.3.3

4.4. DATA MIGRARTION USING MARC EDIT

This preference determines whether or not MARC field names will be present when editing or creating MARC records.

STEP: 1

Click Delimit text translator



MARC Edit Conversion the text files Uploading – Figure 4.4.1

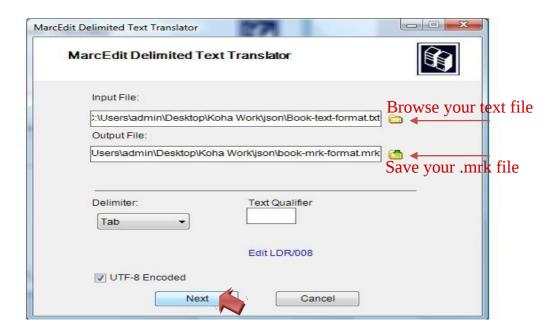
STEP: 2 Then Click Next



Delimited Text Translator – Figure 4.4.2

STEP: 3

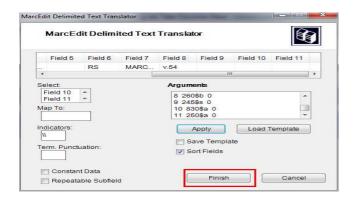
Add the txt format file into it. Here the txt file has been converted into mrk format file and save delimiter as tab. **Figure 4.4.3**

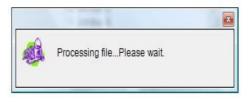


STEP-4 STEP-5

Then select the field and enter the field number,
Then the file processing is taken click

apply and finish place.





Map Fields to MARC Tags – Figure 4.4.4 File Processing - Figure 4.4.5

STEP-6

The file has been created.



File Creation - Figure 4.4.6

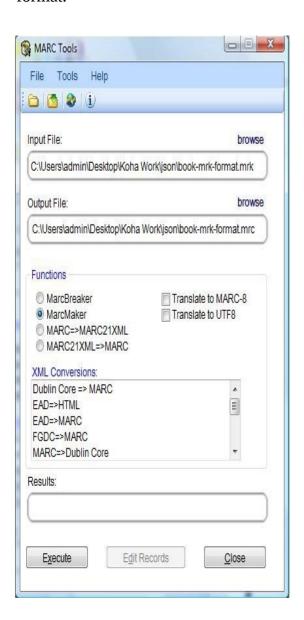
STEPS - 7



MARC Maker - Figure 4.4.7

STEP-8

Then upload the mrk file into it. format.



STEPS - 9

The output finally the results will be will in mrc Executed in this page.



Specify Input and Output

Results – Figure

STEP: 10

STEP: 1 Go to Koha main page

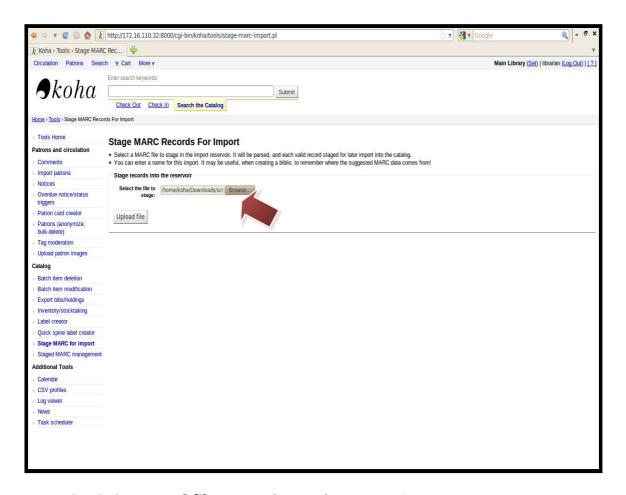
STEP: 2 then click Tools

STEP: 3 stage MARC records for import

STEP; 4 Browse to add the file

STEP: 5 upload the file

STEP: 6 finally the data's were being imported into Koha



MARC Converted file Importing – Figure 4.4.10

CHAPTER - V

DESIGN AND IMPLEMENTATION OF LIBRARY AUTOMATION KOHA (OSS) AT BHARATHIDASAN UNIVERSITY COLLEGE, PERAMBALUR

5.1. About the University College Library

Bharathidasan University College was started at Perambalur on 17th September 2006. The college is mainly meant for rural students. It was started with strength of 475 students enrolled in 7 courses. Now in a short spell of four years the college has grown up to provide 12 Under Graduate and 2 Post Graduate courses with strength of 1,650 students with 14 Assistant professors, 75 Lecturer and 20 Non-teaching staff under its roof. Initially the college was functioning in Old RDO Building and now it has moved to its own beautiful building constructed and declared open recently in a portion of 8.5 acres of land acquired for the college.

The special interest shown by the Honorable Vice Chancellors and Registrars of Bharathidasan University ever since the day of Inauguration, the college has achieved enormous development.

BDU college library has been established in the year 2006 and currently it has over 6500 text books. The library has been refurnished recently with complete reorganization. Accordingly the study has taken up to automate the library operations.

5.1.1. Library Collection

The BDU college library consist of

- **❖** Books
- Periodicals
- Assignments
- Presentations
- Newspapers(dailies)

5.1.2. Books:

BDU College Library has around 6500 books in various subjects like English, Tamil, History, Mathematics, Micro Biology, Physical Education, Computer Science, Social work, Tourism and Travel Management and others which can help the teachers and research scholars to update their knowledge in their respective areas.

5.1.3. Periodicals

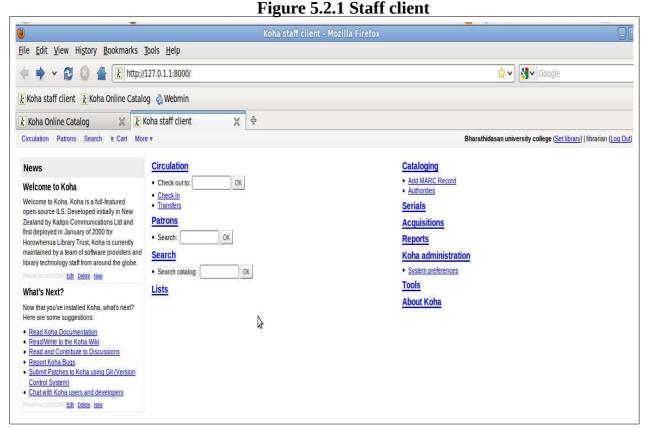
The Library subscriptions arrange of professional journal and general magazine particularly print journals to enable the faculty and student of the college, to have current and updated information.

5.2. Implementation of BDU College Library

Home Page of KOHA Staff client

Home pages of BDU College Library so the all section is available this front page circulation (check in, Check out), patrons information, Search for the catalogues, Reports, Koha

Administration link, tools, About Koha for all links available for the home page.



5.2.2. Administration

Parameters administration is a very important feature of the intranet module of KOHA. Various default parameters can be changed using this functionality. It allows us to define different parameters for the functioning of KOHA like the library branches, book funds, currencies, item types, the categories of borrowers, the charges taken for the different types of items etc.

"System Preferences" is the most important module of KOHA. It deals with administration and maintenance part of KOHA Library System. Only Chief Librarian, Chief Administrator or person of similar designation can hold access rights to this module.

Figure 5.2.

Administration

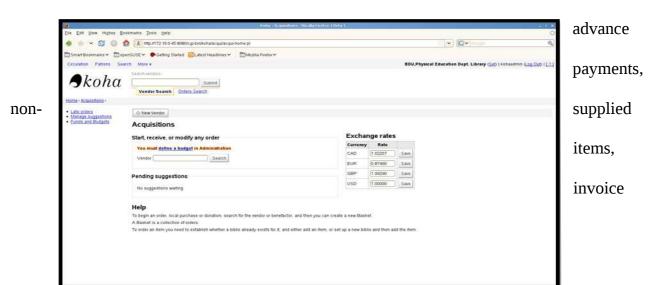
There

are two

methods of acquisition in KOHA one is Normal acquisition and other one is Simple acquisition. If we want to keep track of budget we have to follow Normal Acquisition and in Simple acquisition we aren't concerned with budget. Simple budget module is useful for smaller libraries where limited amount of money is allotted. Clicking on the acquisition link on the home page of intranet takes us to the page where new orders can be made and old ones can be modified. Here, we can verify the exchange rates and the budgets and book funds before going for a new order. It very clearly mentions the total budget, the amount that has been spent, and the available amount under each category.

5.2.4. Acquisition

The acquisition module consists of the procedures for selecting, ordering and receiving books. This module can generate records for books on order, purchase orders, vendors list,



information, checking of duplication, budget and funds,

Figure 5.2.4. Acquisition Page

5.2.5. Cataloguing module

The cataloguing module is most important one, as a good catalogue enables both library users and staff to effectively utilize the resources of the library. For cataloging, KOHA maintains full-MARC record, follow the Dewey decimal classification, and incorporate AACR2 rules. Security and data protection are accomplished at the system, terminal, and user code levels. User interaction is kept very simple, but it depends on who uses the system-whether a library staff member conducts data input, manipulation, and output, or a library patron is accessing information from the system's data base. The decision to design a highly "user-friendly" system that requires minimal instruction governed the menu and front end programs used by patrons.

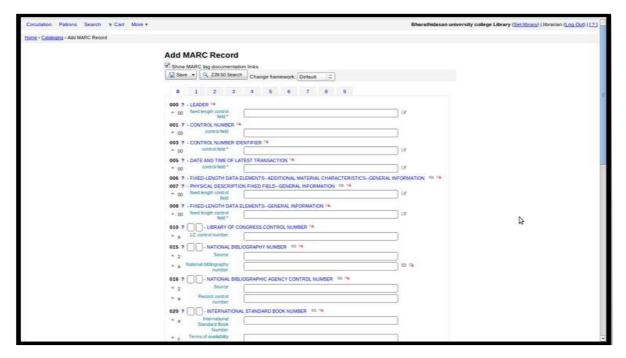


Figure 5.2.5 Cataloguing module

5.2.6 User/patron creation

Patron creation is very simple and is done quickly with the option to add photograph and giving special permission to them (Figure 5.2.6). Bulk upload of patrons and photographs are also available.

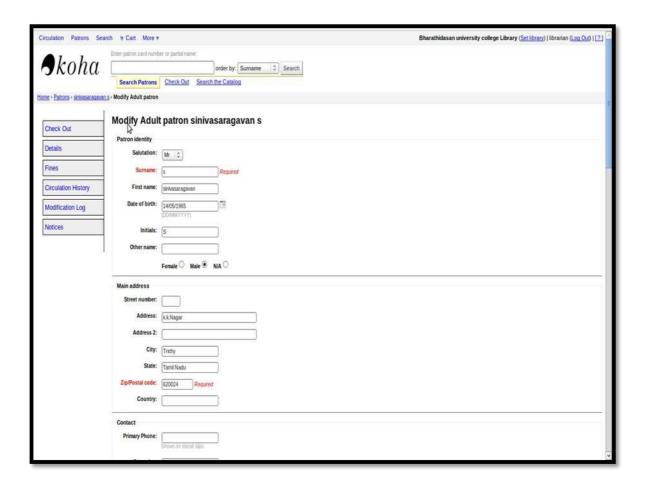


Figure **5.2.6**. Patron Creation Page

After filling the information about the patron, the page shown in appears.

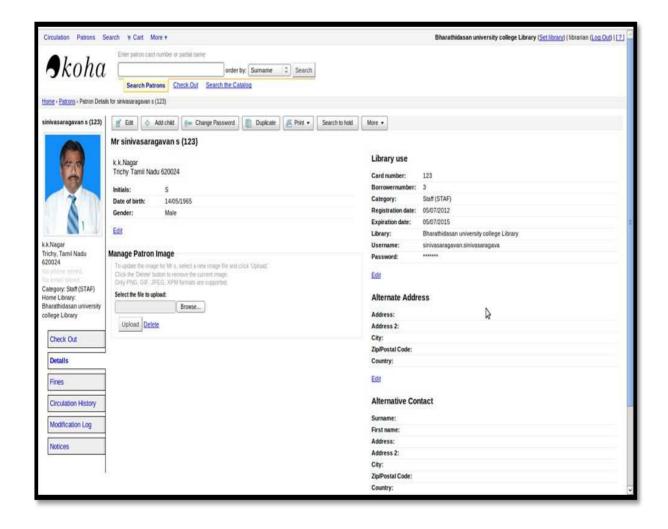


Figure 5.2.7 Patron Result page

5.2.8. Circulation Module

The basic purpose of circulation control is to ensure that the holdings of a library are available to those who need it or for a reasonable period of time and that users are provided an equal opportunity in the use of library material. The circulation module is very fast, easy, and user friendly. We just have to right the partial name or to scan the barcode on the ID of the user and his/her accounts opens. Then there is an option of checking out; just scan the barcode of the book or just type the accession number of the book, it is done.

Circulation Patrons Search & Cart More Bharathidasan university college Library (Set library) | librarian (Log Out) | [?] Enter patron card number or partial name. Check Out Check In Search the Catalog Home + Circulation Circulation · Check Out Circulation Reports · Check in Holds Queue · Holds to pull Holds awaiting pickup Offline Circulation Hold ratios · Offline Circulation File (koc) Uploader . Transfers to receive . Overdues - Warning: This report is very resource intensive on systems with large numbers of overdue items. <u>Describes with fines</u> - Limited to your library. See report held for other details.

Figure 5.2.8. Circulation page

The circulation module also shows considerable amount of records, e.g. records of issues, borrowers; information, due dates, item issued, over- dues, fines, circulation history, etc.

Serial control

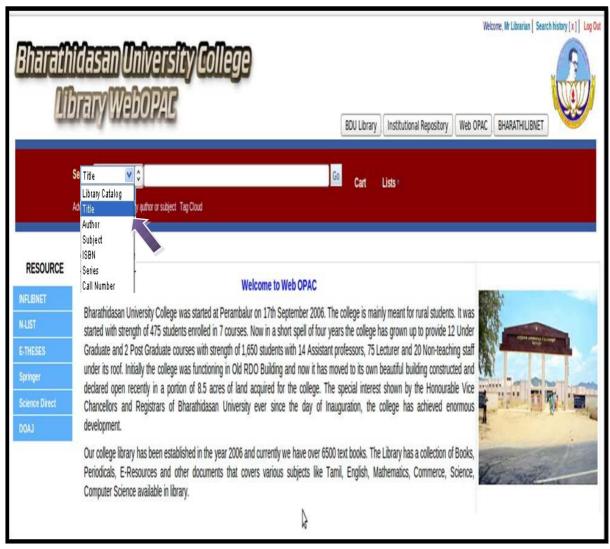
The meaning of serial control is establishment of policies, procedures, and operations for the management of acquisition function and generally for its collection building. The automation of serial control is considered to be the most difficult area of library automation. However, KOHA gives unique features in the serial control module, which makes it very easy to keep record of periodicals and addition of new ones

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and it gives the information about the participated libraries, the types of resources available with their libraries and instruction to search the catalogue effectively.

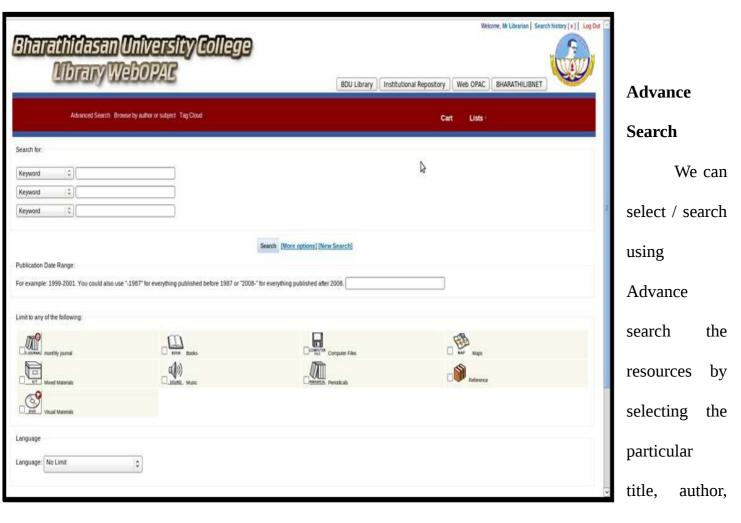
Figure 5.3.1 Homepage

This user interface allows the faculty and students to search the bibliographic details of books, from Catalogue server. There are ten search fields are given such as Keyword, Title, Author, Language, Publisher, Publisher Location, Subject, Series Title, ISBN and Call Number and Different College's.



Author, Subject, etc.., - Figure 5.3.2

Title,



subject etc.. for a quick retrieval. As shown on below fig

Figure 5.3.3 Advance Search

First you have to select field name then enter the search term and click on 'search' button. It will show all the bibliographic record of books on the basis of search term with respect to search field. Book jacket is also enabled for better visualization.

This page shows the OPAC Particular Title module. Here, we can the see title, author subject and Publication and copy available in which department is to be display also.



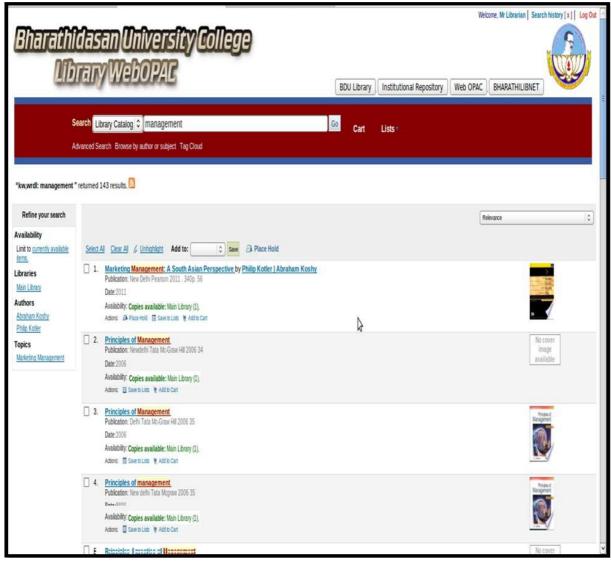


Figure 5.3.4 Results Page

Normal view

The display format in Normal view is also enabled by the OPAC module of the KOHA accordingly the title "conventional and fuzzy logic..." is retrieved and displayed in normal view of the OPAC. This also provides the facility for print, book mark and saving as soft file for the future use of library patron.



Book Details - Figure 5.3.5 Normal view

MARC view

This figure shows the bibliographic record of a book the view of MARC format.

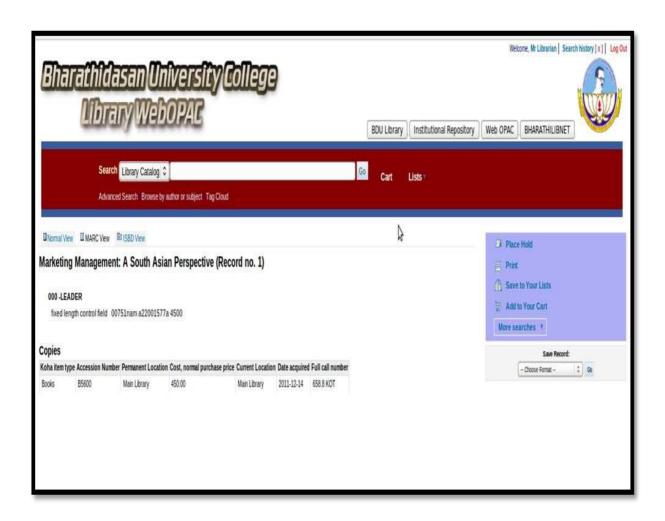


Figure 5.3.6 MARC view

ISBD View

KOHA also enable the display format of International Standard Bibliographic Description view of results that made through OPAC search, here is an example of the documents in ISBD format.



Figure 5.3.7 ISBD View

Outcome of the study

Based on this KOHA implementation at BDUcollege library the following are the outcome of the study

- ❖ BDU college library collections are in a single database
- ❖ It gives the full control over the library collections and operations
- ❖ Faculty members and research scholars can check the required books by the OPAC

- * Research scholars and faculty members can check the status of their barrowed books
- ❖ They can get the complete details about the books for their further reading and research
- ❖ Data entry of the books can be done through the downloading of bibliographic details from Library of congress and other catalogues.
- ❖ This library can share their data in to other college libraries.
- ❖ The library OPAC connected in web environment for the wider reach.

CHAPTER-VII

FINDINGS AND CONCLUSITON

In this research work, a sincere attempt has been made towards finding out ways and means for automating activities in the BDU College Library. This project had the basic objective of designing a bibliographic data base for a BDU College Library with which the automation of circulation routines is carried out. From this point of view it may be concluded that Koha is a useful package for the creation of a database and for information retrieval. This set of programmed for the automation of circulation section is tested with the database created from the collection of BDU College Library. With that test sample the programme for each function of the circulation section is tested with the available computer system. Koha is a

integrated software system with all the required models for small to very large libraries. It is found that this automation projects will serve as a model for any library. Being an open source, any Library wanted to go for automation for their library housekeeping operations can make use of this software.

This project further enabled the students and faculty of the college to access the bibliographic data and can made transactions every from their home and remote places through internet.

Automation of the collage library, particularly using open source software KOHA live CD would help the modernization of the library services for college, which is statewide and backward, rural remote area.

Implementation of also enabled library Professionals working in the college library, to make award of library automation, particularly with advance features of integrated open source software KOHA and to participate in the university library networks and other library networks for sharing and accessing the data.

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- http://libraries.idaho.gov/blogs/
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